

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

the patent number one of the cited prior art references; and newly submitted claim 12 is added.

Support for newly submitted claim 12 is found in the originally filed specification in the last paragraph of page 2.

It is respectfully submitted that the amendment to claim 1 merely clarifies the invention, does not narrow the scope of the claim, and is not intended to address any issue related to patentability based on cited prior art.

It is therefore submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. § 132.

Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claim 11 was rejected as indefinite.

RESPONSE BEST AVAILABLE COPY

Claim 11 has been canceled thereby rendering its rejection moot.

Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. § 103

The Examiner rejected claims 1-10 as obvious over U.S. Patent No. 4,787,699 to Moulin in view of U.S. Patent No. 6,179,658 to Gunay et al. and U.S. Patent No. 6,325,670 to Murayama, stating:

Moulin discloses the claimed optical fibre connector comprising a housing and an internal core member 17 defining a channel means for receiving an optical fibre. It is noted that Moulin lacks chamber with gel adhesive with plunger means for forcing the gel adhesive for sealing of the optical fibre. Gunay et al. discloses connector provided with gel adhesive chamber 224 and plunger means 222 for forcing the gel adhesive for sealing of conductor 14. Murayama also discloses connector provided with chamber gel adhesive 41 and plunger means 43. Therefore it would have been obvious to provide chamber with gel adhesive and plunger means for Moulin optical fibre connector for sealing of his optical fiber in view of the teachings of Gunay et al. and Murayama. The goal of gel adhesive is old and well known in the art for sealing of optical fiber connector and the use of plunger means would facilitate its application.

RESPONSE

Applicant respectfully traverses the rejection.

Applicant traverses the rejection because all three prongs for a *prima facie* case of obviousness have not been established.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial

burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

Applicant respectfully submits that the cited prior art references fail to teach all the limitations as claimed in claims 1-10 as originally submitted and as herein resubmitted, and therefore the purported combination of the cited references would not result in the presently claimed invention.

The present invention, as claimed in claims 1-10 as originally submitted and as herein resubmitted without substantive amendment, is directed to an optical fibre connector having a channel with an optical fibre disposed therein. A quantity of a curable adhesive is disposed within a chamber in communication with the channel. A volume of the chamber can be reduced by action of a plunger whereby the adhesive is urged into the channel around the optical fiber to cure.

The Examiner asserts that the Moulin patent discloses the claimed optical fibre connector as comprising a housing an internal core member defining a channel for receiving an optical fibre.

Applicant respectfully disagrees. Nevertheless, even assuming arguendo that the Moulin patent discloses the basic structural elements of the claimed optical fibre connector, the Examiner concedes that Moulin does not disclose a chamber containing an adhesive. Moreover, the Examiner concedes that Moulin does not

disclose a plunger that reduces the volume of the chamber, whereby a quantity of spreadable, curable adhesive contained in the chamber is urged around an optical fibre disposed in the channel by the plunger before the adhesive cures, as claimed in claim 1.

The Examiner asserts that the Gunay et al. and Murayama patents disclose the limitations not found in the Moulin patent. Applicant again respectfully disagrees. Applicant submits that the examiner has imputed certain teachings to the Gunay et al. and Murayama patents which, in fact, they do not contain. Applicant submits that the Examiner has misconstrued claim 1 as originally submitted and consequently has sought out and applied prior art references which are irrelevant with respect to the presently claimed invention.

Applicant particularly notes that the Examiner asserts that the "use of gel adhesive is old and well known in the art for sealing of optical fibre connector..." While use of a gel may be old, Applicant respectfully submits that the Examiner's reliance on a gel, in general, and the Gunay et al. and/or Murayama patents, in particular, is misplaced.

As originally submitted claim 1 claims a "curable adhesive". Applicant respectfully submits that a person skilled in the art would not construe a "curable adhesive" to be a "gel", as the Examiner has done, because a gel is not subject to "cure", and a "gel" is not an "adhesive".

The term "gel" relates to a mechanical property of a material and refers to a colloid or semi-solid substance having form-stability.

In contrast, "cure" (the process of curing) is understood by those skilled in the art to involve a chemical reaction process whereby physical and/or chemical properties of the adhesive material undergo change. For example, as disclosed in the specification, and as claimed in claim 2, the adhesive may be a two-part epoxy wherein each part of the epoxy is contained in a separate fragile casing whereupon compression by the plunger causes the casings to rupture so that the two parts of the epoxy intermix with each other thereby initiating the chemical reaction between the two parts which causes cure.

As also disclosed in the specification, and as claimed in newly submitted claim 12, the adhesive can be air-curable whereby rupture of an air-impervious container permits the adhesive to become exposed to the surrounding air whereupon the adhesive cures in a reaction with the air.

In contrast, a gel, such as disclosed in the Gunay et al. and Murayama patents, is merely subjected to physical compression so as to provide a fluid-tight mechanical seal. A gel does not undergo a chemical reaction. Therefore a gel does not "cure" as claimed in claim 1 as originally submitted and as herein resubmitted. Accordingly, the Examiner's reliance on the Gunay et al. and/or

Murayama patents disclosure of a "gel" is misplaced.

Even assuming *arguendo* that a "gel" could be construed as "curable", Applicant respectfully submits that the Examiner has nevertheless ignored the claimed property that a reduction in volume of the chamber caused by the plunger urges the adhesive around an optical fibre disposed in the channel. As claimed in claim 1 as originally submitted and as herein amended to clarify the invention, the claimed adhesive must be capable of being urged, or flowing, in response to a reduction in volume of the chamber induced by the plunger. A gel adhesive, however, due to its form-stability, is generally incapable of being urged or flowing.

The Examiner asserts that the Gunay et al. patent discloses a chamber 224. As shown in the Gunay et al. patent at Fig. 6, and as disclosed at col. 3, line 36 and col. 3, line 65 - col. 4, line 7, element 224 is a compressible seal that seals against flexible printed circuit 214 due to a pressure received from flap member 222. Although the seal 224 may be formed from a silicone gel, thereby rendering it compressible, seal 224 does not cure, as claimed in claim 1 as originally submitted. Moreover, seal 224 is not spreadable so as to be urged around an optical fibre disposed in the channel, as claimed in claim 1 as amended. Most significantly, seal 224 of the Gunay et al. patent "is of a predetermined size to ensure that the seal is compressed on moving the flap member 222 to the disclosed position" (col. 3, lines 65-

67) "formed in one piece and ... substantially annular" (col. 4, line 2) or "formed in two parts, with one part secured to the flap member 222 prior to compression, and the other part secured to the wall 220 prior to compression" (col. 4, lines 5-7).

It is therefore submitted that the Gunay et al. patent does not disclose a spreadable, curable adhesive that can be urged around an optical fibre disclosed in the channel as claimed in claim 1 as originally submitted and as herein amended and resubmitted.

The Examiner asserts that the Murayama patent discloses a gel adhesive 41 and rear holder (plunger) 43. Applicant again respectfully disagrees. As with the Gunay et al. patent, gel member 41 is a mat-shaped sealing member, not an adhesive. Gel member 41 like the gel adhesive of the Gunay et al. patent, must have form stability. Gel member 41 has an external shape substantially the same as the cross-sectional shape of hollow portion 35 of the connector (column 4, lines 18-22). Gel member 41 does not cure, as claimed in claim 1 as originally submitted. Moreover, gel member 41 is not spreadable so as to be urged around an optical fibre disposed in the channel, as claimed in claim 1 as amended. Rear holder (plunger) 43 can be positioned either at a provisional engagement position, where gel mat 41 is not compressed, or at a plenary engagement position, where the gel mat is compressed and forced towards abutment face 37 at the rear of

housing 31 (see col. 4, lines 60-64).

Neither the Gunay et al. nor the Murayama patent discloses a spreadable, curable adhesive that can be urged around an optical fibre in a channel by action of a plunger that reduces the volume of a chamber, as claimed in claim 1. Claim 1 is therefore asserted to be patentable over the cited prior art.

Claims 2-10, each ultimately dependent from claim 1 are asserted to be patentable over the cited prior art references for at least the same reasons that claim 1 is patentable thereover.

Claim 2 is further asserted to be patentable over the cited prior art because none of the cited references disclose that the adhesive is a two-part epoxy in which the respective parts are contained in frangible casings as claimed in claim 2. Although the Murayama and Gunay et al. patents disclose a "gel", a gel is not a two part epoxy, as claimed in claim 2. Additionally, the Murayama and Gunay et al. gels are not contained in a frangible casing as likewise claimed in claim 2.

Moreover, Applicant respectfully submits that the Murayama patent teaches away from use of an epoxy. The Murayama patent is directed to a waterproof connector wherein the "terminals can be removed and re-inserted **which is impossible with an epoxy adhesive**" (col. 1, lines 59-61).

Therefore claim 2 as originally submitted and as herein resubmitted without amendment is asserted to be patentable over the

cited prior art.

Claim 3 and 4 are further asserted to be patentable over the cited prior art because none of the cited references disclose that the plunger includes fibre-engaging resilient means as claimed in claim 3. Therefore claims 3-4 as originally submitted and as herein resubmitted without amendment are asserted to be patentable over the cited prior art.

Claim 5 is further asserted to be patentable over the cited prior art because none of the cited references disclose a ferrule as claimed in claim 5. Therefore claim 5 as originally submitted and as herein resubmitted without amendment is asserted to be patentable over the cited prior art.

Claim 6 is further asserted to be patentable over the cited prior art because none of the cited references disclose that the fibre stub has a frusto-conical shape as claimed in claim 6. Therefore claim 6 as originally submitted and as herein resubmitted without amendment is asserted to be patentable over the cited prior art.

Claims 8-9 are further asserted to be patentable over the cited prior art because none of the cited references disclose that the plunger means is indirectly activatable and comprises a compression head within the housing and a cooperating activation member which extends from the housing and which is manually movable to cause the compression head to reduce the chamber volume as

claimed in claim 8. Therefore claims 8-9 as originally submitted and as herein resubmitted without amendment are asserted to be patentable over the cited prior art.

Accordingly, reconsideration and withdrawal of the rejections is respectfully requested.

Newly Submitted Claim

Newly submitted claim 12, dependent from claim 1, is asserted to be patentable over the cited prior art for at least the same reasons that claim 1 is patentable thereover.

CONCLUSION

In light of the foregoing, Applicant submits that the application is in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

Respectfully submitted,

NATH & ASSOCIATES PLLC



Harold L. Novick
Registration No. 26,011
Marvin C. Berkowitz
Registration No. 47,421

Date: May 27, 2003

NATH & ASSOCIATES PLLC
1030 Fifteenth Street, N.W.
Sixth Floor
Washington, DC 20005
(202) 775-8383

Attachment "A"

(Marked-Up Copy of Amended Specification Paragraph)

Please amend the specification paragraph at page 1, lines 10-26, as follows:

Optical fibre connectors are devices for forming butt joints or splices between lengths of optical fibre. Such connectors support the end region of an optical fibre and can be mechanically connected to another connector or another part of the connector to form a joint. In order to minimise losses of transmitted light at the joint, it is necessary for the respective end faces of the fibre to be polished so that they are perfectly planar as possible and normal to the axis of the fibre and for the fibres to be axially aligned with their respective end faces contiguous. To meet these requirements, various types of connector have been developed which provide an immobilised mount for the fibre and permit the end face thereof to be polished. For example, US[4476194] 4746194 describes a connector having centering elements for supporting the end of the fibre while a curable material such as an epoxy adhesive is introduced within the connector body whereby, after curing has taken place, the end of the connector together with the spatially-fixed fibre can be ground to present a flat end surface. US 4984865 describes a connector in which the optical fibre can be introduced into the connector body containing a thermoplastic adhesive, in which the adhesive is initially heated

to reduce its viscosity and to allow passage therethrough of the optical fibre, the adhesive subsequently re-hardening and allowing the fibre end to be polished.